IN THE CLAIMS:

1. (currently amended) A quartz pressure sensor, comprising a bottom plate ~~made from an insulating material~~, a lower electrode film and a dielectric film sequentially laminated on [[a]] an upper face of said bottom plate, a detecting piece provided at a position thereof opposed to said dielectric film with a thin portion and fixed on the upper face of said bottom plate, and an upper electrode film formed in at least one portion of said thin portion having a positional relationship thereof opposed to said lower electrode film, ~~in which a fine gap space is provided between said upper electrode film and said dielectric film, characterized in that said detecting piece is made from a quartz material~~ characterized in that said detecting piece is made from a quartz material having a cut angle that allows measurement of a natural frequency based on a thickness of said thin portion when a current is caused to flow in said thin portion.

2. (currently amended) A quartz pressure sensor, comprising a bottom plate ~~made from an insulating material~~, a lower electrode film ~~laminated on a face of said bottom plate~~ and a dielectric film sequentially laminated on an upper face of said bottom plate, a detecting piece provided at a position thereof opposed to said dielectric film with a thin portion and fixed on the upper face of said bottom plate, and an upper electrode film formed in at least one portion of said thin portion having a positional relationship thereof opposed to said lower electrode film, ~~in which a fine gap space is provided between said upper electrode film and said lower electrode film, characterized in that said detecting piece is made from a quartz material~~ characterized in that said detecting piece is made from a quartz material having a thickness sliding oscillation mode or a thickness vertical mode that allows measurement of a natural frequency based on a thickness of said thin portion when a current is caused to flow in said thin portion.

3. (currently amended) [[The]] A quartz pressure sensor ~~according to claim 1 or 2, characterized in that said airtight space is formed at least by a recessed portion formed on one portion of a lower face of said detecting piece or a recess formed on a face of said bottom plate,~~ comprising a bottom plate, a lower electrode film and a dielectric film sequentially laminated on an upper face of said bottom plate, a detecting piece provided at a position thereof opposed

to said dielectric film with a thin portion and fixed on the upper face of said bottom plate, and an upper electrode film formed in at least one portion of said thin portion having a positional relationship thereof opposed to said lower electrode film, characterized in that said detecting piece is constituted of an AT cut quartz plate that allows measurement of a natural frequency based on a thickness of said thin portion when a current is caused to flow in said thin portion.

4. (currently amended) A quartz pressure sensor~~, comprising a lower electrode film and a dielectric film sequentially laminated on a face of a bottom plate made from an insulating material, a detecting piece constituted of a thin portion and a thick portion surrounding said thin portion, and an upper electrode film formed in at least one portion of a lower face of the thin portion in said detecting piece, in which an airtight space defined by a fine gap is formed between the thin portion and the bottom plate by fixing a lower face of the thick portion in said detecting piece to the face of the bottom plate in a close contact manner, characterized in that said detecting piece is made from a quartz material~~ of a touch-mode type, comprising a bottom plate, a lower electrode film and a dielectric film sequentially laminated on an upper face of said bottom plate, a detecting piece provided at a position thereof opposed to said dielectric film with a thin portion and fixed on the upper face of said bottom plate, and an upper electrode film formed in at least one portion of said thin portion having a positional relationship thereof opposed to said lower electrode film, characterized in that said detecting piece is made from a quartz material having a cut angle that allows measurement of a natural frequency based on a thickness of said thin portion when a current is caused to flow in said thin portion.

5. (currently amended) [[The]] A quartz pressure sensor ~~according to any one of claims 1 to 4, characterized in that said bottom plate is made from a quartz material~~ of a touch-mode type, comprising a bottom plate, a lower electrode film and a dielectric film sequentially laminated on an upper face of said bottom plate, a detecting piece provided at a position thereof opposed to said dielectric film with a thin portion and fixed on the upper face of said bottom plate, and an upper electrode film formed in at least one portion of said thin portion having a positional relationship thereof opposed to said lower electrode film, characterized in that said detecting piece is made from a quartz material having a thickness sliding oscillation mode or a

thickness vertical mode that allows measurement of a natural frequency based on a thickness of said thin portion when a current is caused to flow in said thin portion.

6. (currently amended) A quartz pressure sensor~~, comprising a dielectric film also serving as a lower electrode film and laminated on a face of a bottom plate made from a conductive material, a detecting piece constituted of a thin portion and a thick portion surrounding said thin portion, and an upper electrode film formed in at least one portion of a lower face or an upper face of the thin portion in said detecting piece, in which an airtight space defined by a fine gap is formed between the thin portion and the bottom plate by fixing a lower face of the thick portion in said detecting piece to the face of said bottom plate in a close contact manner, characterized in that said detecting piece is made from a quartz material~~ of a touch-mode type, comprising a bottom plate, a lower electrode film and a dielectric film sequentially laminated on an upper face of said bottom plate, a detecting piece provided at a position thereof opposed to said dielectric film with a thin portion and fixed on the upper face of said bottom plate, and an upper electrode film formed in at least one portion of said thin portion having a positional relationship thereof opposed to said lower electrode film, characterized in that said detecting piece is made of an AT cut quartz plate that allows measurement of a natural frequency based on a thickness of said thin portion when a current is caused to flow in said thin portion.

7. (currently amended) A quartz pressure sensor, ~~characterized in that the detecting piece according to any one of claims 1 to 6 is disposed such that a main face of the thin portion on its flat face side is opposed to the face of the bottom plate~~ comprising a bottom plate, a lower electrode film and a dielectric film sequentially laminated on an upper face of said bottom plate, a detecting piece provided at a position thereof opposed to said dielectric film with a thin portion and fixed on the upper face of said bottom plate, and an upper electrode film formed in at least one portion of said thin portion having a positional relationship thereof opposed to said lower electrode film, characterized in that said detecting piece is of a touch-mode type made from a quartz material having a cut angle that allows measurement of a natural frequency based on a thickness of said thin portion when a current is caused to flow in said thin portion, and the

thin portion of said detecting piece or the upper electrode film is in a contacting state with said dielectric film or the face of said bottom plate during non-measurement.

8. (currently amended) [[The]] A quartz pressure sensor ~~according to any one of claims 1 to 7, characterized in that said detecting piece is formed with the thin portion by performing a thinning work on a quartz plate with etching~~, comprising a bottom plate, a lower electrode film and a dielectric film sequentially laminated on an upper face of said bottom plate, a detecting piece provided at a position thereof opposed to said dielectric film with a thin portion and fixed on the upper face of said bottom plate, and an upper electrode film formed in at least one portion of said thin portion having a positional relationship thereof opposed to said lower electrode film, characterized in that said detecting piece is of a touch-mode type made from a quartz material having a thickness sliding oscillation mode or a thickness vertical mode that allows measurement of a natural frequency based on a thickness of said thin portion when a current is caused to flow in said thin portion, and the thin portion of said detecting piece or the upper electrode film is in a contacting state with said dielectric film or the face of said bottom plate during non-measurement.

9. (currently amended) [[The]] A quartz pressure sensor ~~according to any one of claims 1 to 8, characterized in that said detecting piece and said bottom plate are made from quartz materials of the same kind, and the detecting piece is joined to the bottom plate such that crystal axes of the detecting piece and the bottom plate coincide with each other~~, comprising a bottom plate, a lower electrode film and a dielectric film sequentially laminated on an upper face of said bottom plate, a detecting piece provided at a position thereof opposed to said dielectric film with a thin portion and fixed on the upper face of said bottom plate, and an upper electrode film formed in at least one portion of said thin portion having a positional relationship thereof opposed to said lower electrode film, characterized in that said detecting piece is of a touch-mode type constituted of an AT cut quartz plate that allows measurement of a natural frequency based on a thickness of said thin portion when a current is caused to flow in said thin portion, and the thin portion of said detecting piece or the upper electrode film is in a contacting state with said dielectric film or the face of said bottom plate during non-measurement.

10. (currently amended) [[The]] A quartz pressure sensor ~~according to any one of claims 1 to 9, characterized in that said quartz pressure sensor is of a touch-mode type~~ of a touch-mode type, comprising a bottom plate, a lower electrode film and a dielectric film sequentially laminated on an upper face of said bottom plate, a detecting piece provided at a position thereof opposed to said dielectric film with a thin portion and fixed on the upper face of said bottom plate, and an upper electrode film formed in at least one portion of said thin portion having a positional relationship thereof opposed to said lower electrode film, characterized in that said detecting piece is constituted of a quartz plate having a cut angle where a normal line to a face of the quartz plate is approximately coincident with a direction of a crystal axis of quartz.

11. (currently amended)[[The]] A quartz pressure sensor ~~according to any one of claims 1 to 10, characterized in that the thin portion in said detecting piece or the upper electrode film is in contact with said dielectric film or the face of the bottom plate during non-measurement,~~ comprising a bottom plate, a lower electrode film and a dielectric film sequentially laminated on an upper face of said bottom plate, a detecting piece provided at a position thereof opposed to said dielectric film with a thin portion and fixed on the upper face of said bottom plate, and an upper electrode film formed in at least one portion of said thin portion having a positional relationship thereof opposed to said lower electrode film, characterized in that said detecting piece, as a quartz plate, is of a touch-mode type that is constituted of a quartz plate having a cut angle where a normal line to a face of the quartz plate is approximately coincident with a direction of a crystal axis of quartz, and the thin portion of said detecting piece or the upper electrode film is in a contacting state with said dielectric film or the face of said bottom plate during non-measurement.

12. (currently amended) The quartz pressure sensor according to ~~claim 11~~ any one of claims 1 to 11, characterized in that said ~~airtight space is in a vacuum state~~ detecting piece comprises said thin portion and a thick portion surrounding said thin portion, and at least said thick portion is fixed on a face of said bottom face.

13. (currently amended) The quartz pressure sensor according to any one of claims [[1 to 12]] 1 to 11, characterized in that said detecting piece ~~is made from a quartz material having a cut angle which can control a resonant frequency by plate thickness adjustment~~ comprises said thin portion and a thick portion surrounding said thin portion, said bottom plate is made from a quartz material, has a recessed portion obtained by forming one portion of the quartz material in a thin portion, and has said lower electrode film and said dielectric film sequentially laminated on a bottom face of said recessed portion, and thick portion of said detecting piece is fixed on an upper face of a thick portion of said bottom plate such that the thin portion of said detecting piece is positioned on an upper face of the recessed portion of said bottom plate.

14. (currently amended) [[A]] The quartz pressure sensor according to any one of claims 1 to 11, characterized in that ~~the quartz material according to claim 13 is made from a quartz material having a thickness sliding oscillation mode or a thickness vertical mode~~ said detecting piece and said bottom plate are made from quartz materials of the same kind, and said detecting piece is fixed on said bottom plate such that crystal axes of said detecting piece and said bottom plate coincide with each other.

15. (currently amended) The quartz pressure sensor according to any one of ~~claims 1 to 14~~ claims 1 to 10, characterized in that said ~~detecting piece is constituted of an AT cut quartz plate~~ thin portion is one obtained by forming a quartz plate to be thin by an etching process.

16. (currently amended) ~~A manufacturing method of~~ The quartz pressure sensor according to [[claims 13 to 15]] any one of claims 1 to 11, characterized ~~by comprising a step of frequency converting the thickness of said thin portion to confirm the same~~ in that said detecting piece comprises said thin portion and a thick portion surrounding said thin portion, and said thin portion is obtained by forming a quartz plate to be thin by an etching process.

17. (currently amended) The quartz pressure sensor according to any one of [[claims 10 to 12]] claims 1 to 11, ~~characterized in that said quartz pressure sensor is a touch mode type pressure sensor where a quartz plate with a cut angle where a normal line to a face of the quartz~~

~~plate is approximately coincident with a quartz crystal Z-axis direction is used as the quartz plate constituting the detecting piece~~ comprising a bottom plate, a lower electrode film and a dielectric film sequentially laminated on an upper face of said bottom plate, a detecting piece provided at a position thereof opposed to said dielectric film with a thin portion and fixed on the upper face of said bottom plate, and an upper electrode film formed in at least one portion of said thin portion having a positional relationship thereof opposed to said lower electrode film, characterized in that a vacuum space is provided between said upper electrode film and said dielectric film.

18. (new) A manufacturing method of the quartz pressure sensor according to any one of claims 1 to 9, characterized in that a step of processing a thickness of a quartz plate to form said thin portion includes a step of frequency-converting the thickness of said thin portion to confirm the same.